

Name _____

HONORS ALGEBRA 2 Final Exam Objectives

The final exam is on Chapters 6, 7, 8, 10, and 11 (not Chapter 9)

Students should be able to:

Chapter 6-- Quadratic Functions and Inequalities

1. Graph quadratic functions.
2. Find and interpret the maximum and minimum values of a quadratic function.
3. Solve quadratic equations by graphing.
4. Estimate solutions of quadratic equations by graphing.
5. Solve quadratic equations by factoring.
6. Write a quadratic equation with given roots.
7. Solve quadratic equations by using the Square Root Property.
8. Solve quadratic equations by completing the square.
9. Solve quadratic equations by using the Quadratic Formula.
10. Use the discriminant to determine the number and type of roots of a quadratic equation.
11. Analyze quadratic functions of the form $y = a(x - h)^2 + k$.
12. Write a quadratic function in the form $y = a(x - h)^2 + k$.
13. Graph quadratic inequalities in two variables.
14. Solve quadratic inequalities in one variable.

Chapter 7-- Polynomial Functions

1. Evaluate polynomial functions.
2. Identify general shapes of graphs of polynomial functions
3. Graph polynomial functions and locate their real zeros.
4. Find the maxima and minima of polynomial functions.
5. Write expressions in quadratic form.
6. Use quadratic techniques to solve equations.
7. Evaluate functions using synthetic substitution.
8. Determine whether a binomial is a factor of a polynomial by using synthetic substitution.
9. Determine the number of roots for a polynomial equation.
10. Find the zeros of a polynomial function.
11. Identify the possible rational zeros of a polynomial function.
12. Find all the rational zeros of a polynomial function.
13. Find the sum, difference, product, and quotient of functions.
14. Find the composition of functions.
15. Find the inverse of a function or relation.
16. Determine whether two functions or relations are inverses.
17. Graph and analyze square root functions.
18. Graph square root inequalities.

Chapter 8--Conic Sections

1. Find the midpoint of a segment on the coordinate plane.
2. Find the distance between two points on the coordinate plane.
3. Write equations of parabolas in standard form.
4. Graph parabolas.
5. Write equations of circles.
6. Graph circles.
7. Write equations of ellipses.
8. Graph ellipses.
9. Write equations of hyperbolas.
10. Graph hyperbolas.
11. Write equations of conic sections in standard form.
12. Identify conic sections from their equations.
13. Solve systems of quadratic equations algebraically and graphically.
14. Solve systems of quadratic inequalities graphically.

Chapter 10--Exponential and Logarithmic Relations

1. Graph exponential functions.
2. Solve exponential equations and inequalities.
3. Evaluate logarithmic equations and inequalities.
4. Solve logarithmic equations and inequalities.
5. Simplify and evaluate expressions using the properties of logarithms.
6. Solve logarithmic equations using the properties of logarithms.
7. Solve exponential equations and inequalities using common logarithms.
8. Evaluate logarithmic expressions using the Change of Base Formula.
9. Evaluate expressions involving the natural base and natural logarithms.
10. Solve exponential equations and inequalities using natural logarithms.
11. Use logarithms to solve problems involving exponential growth and decay.

Chapter 11--Sequence and Series

1. Use arithmetic sequences.
2. Find arithmetic means.
3. Find the sums of arithmetic series.
4. Use sigma notation.
5. Use geometric sequences.
6. Find geometric means.
7. Find sums of geometric series.
8. Find specific terms of geometric series.
9. Find the sum of infinite geometric series.